# Natural Climate Solutions in the Voluntary Carbon Market

***Research, intelligence, and insights on NCS impacts, improvements, and implementation***

Multi-Client Study Prospectus
Fall 2022

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# Outline

- **Study Prospectus**
- About ADI

# ADI's new study will analyze NCS drivers and growth, and outline opportunities, challenges, and strategic implications

**Multi-client study drivers**

- Natural climate solutions (NCS) have the potential to yield a third of the $CO_2$ mitigation through 2030 for emissions to be aligned with the Paris Agreement.
- Interest in NCS has increased significantly in recent years with a large portion of retired carbon credits coming from NCS.
- Scaling up the NCS market is critical but faces criticism with permanence, leakage, and additionality (PLA) as well as challenges regarding best practices, scalability, and others.
- ADI is inviting companies to join its new multi-client study for a comprehensive review of NCS and addressing the key strategic questions around this segment.

**Strategic questions for the ADI study**

- What are the existing and forecasted drivers and trends for the NCS market?
- Which national and international policies and regulations will affect this space?
- Who are all the stakeholders involved in the NCS sector from a supply and demand perspective, and what solutions are available?
- What challenges does the industry face?  How will new technology and commercial innovations address these challenges?
- How is the industry improving, and what else can be done to advance the NCS implementation?
- What are the strategic implications for key market participants and associated risks and uncertainties?

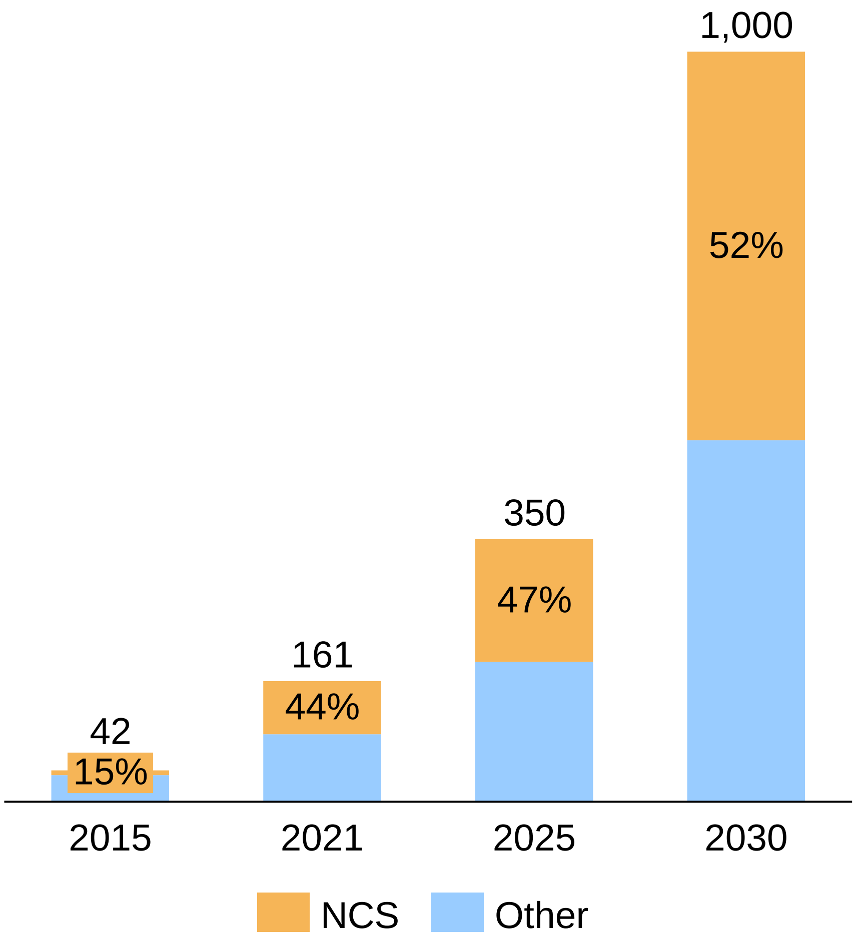
# Nature-based solutions (NBS) and natural climate solutions (NCS) are used interchangeably but have a key difference

**Focus of this report**

| | Nature Based Solutions (NBS) | Natural Climate Solutions (NCS) |
|---|---|---|
| **Description** | Sustainable environmental practices that address broad range of societal challenges can be taken to manage land and ecosystems that benefit society | Type of NBS that focuses primarily on carbon dioxide mitigation while trying to maximize co-benefits |
| **Examples** | • Reduce flood risk<br>• Improve water quality<br>• Protect coastal property<br>• Stabilize shorelines<br>• Reduce urban heat<br>• Add recreation space | • Reforestation<br>• Fire management<br>• Biochar<br>• Grassland restoration<br>• Cover crops<br>• Wetland restoration<br>• Seagrass restoration |

# Voluntary carbon markets are growing carbon offset demand exponentially and will need NCS to play a critical role

**Voluntary carbon market retirements**
(Mt $CO_2$ / year)

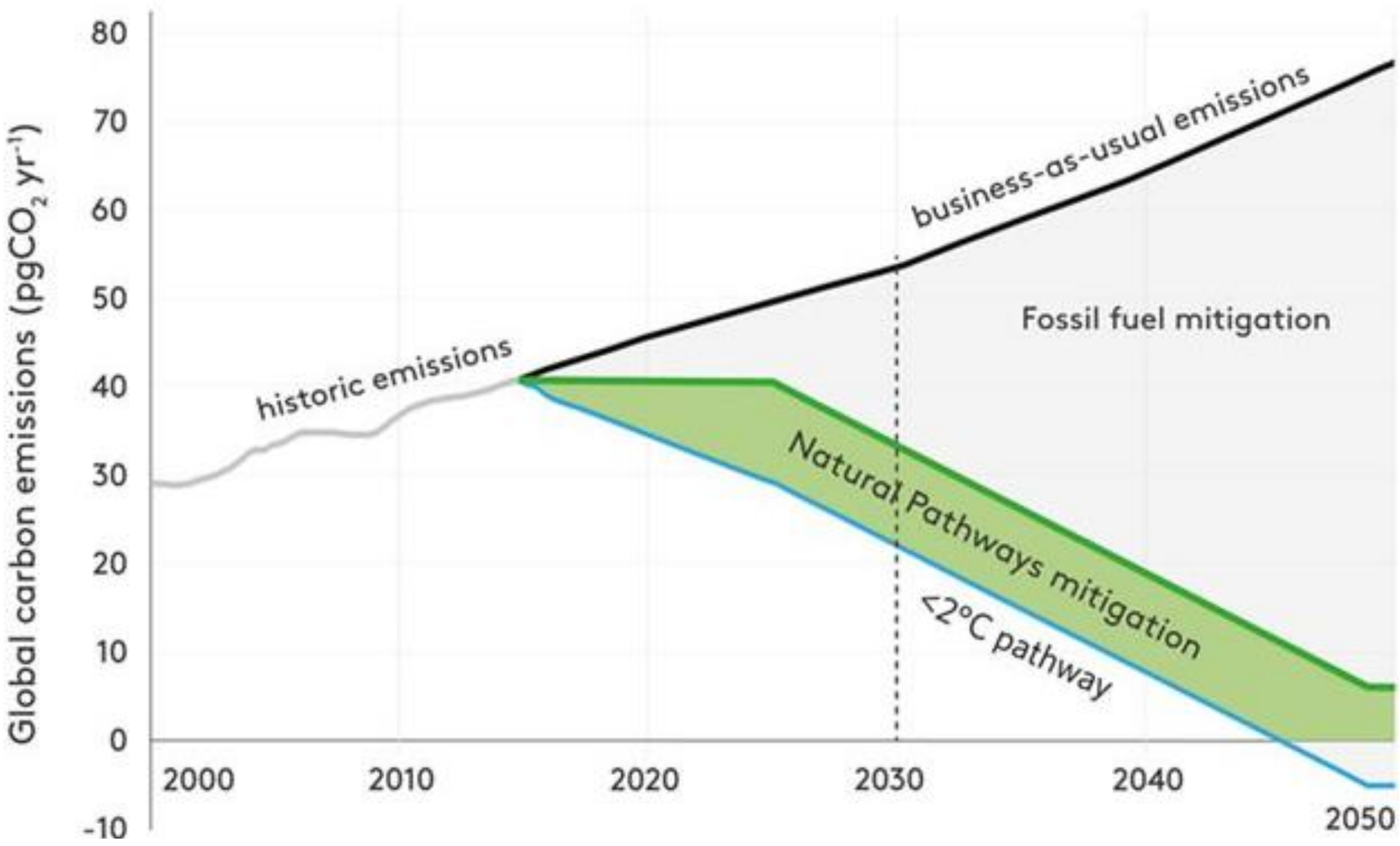



**Discussion**

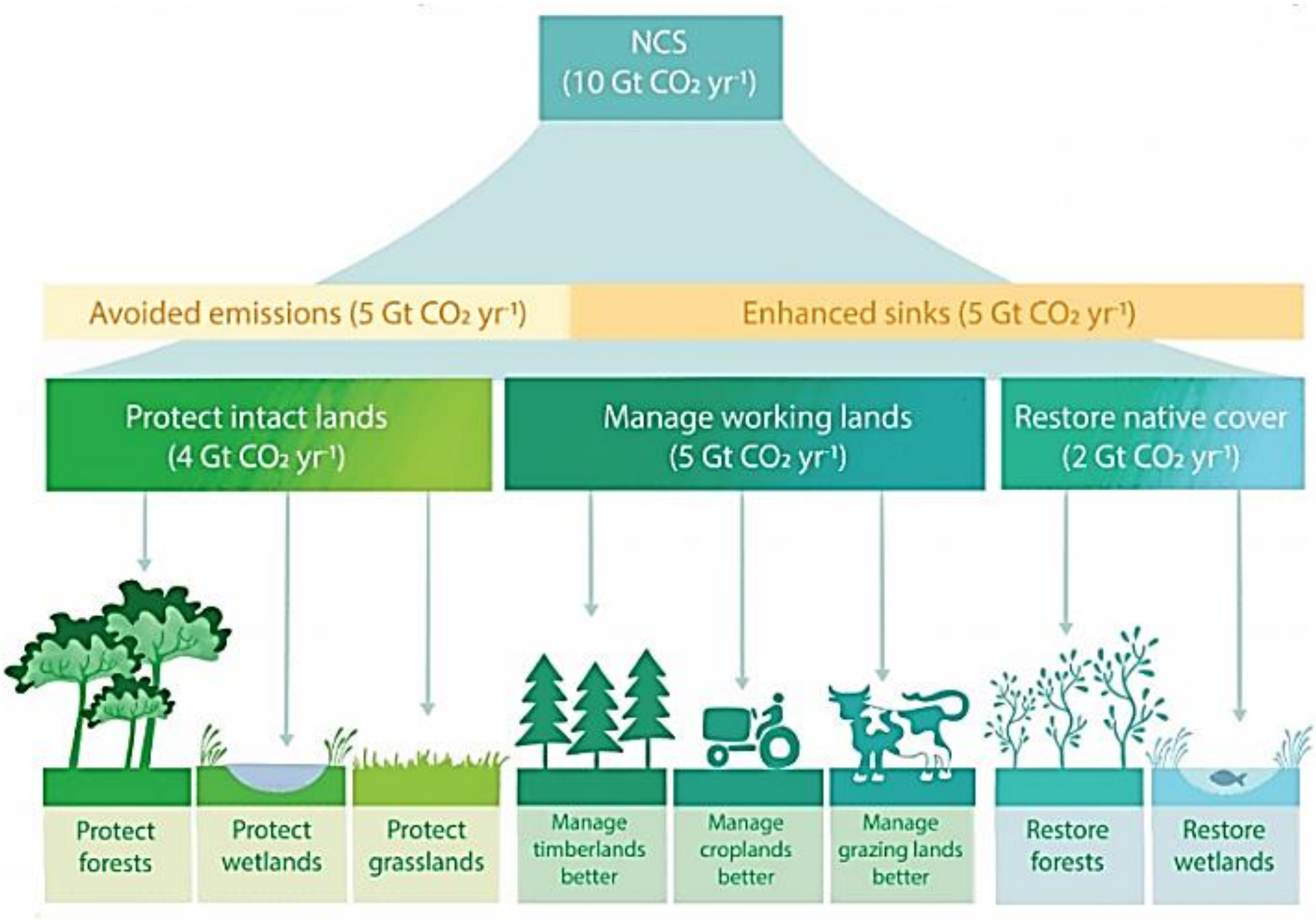
- As decarbonization commitments and initiatives grow, demand for carbon offsets is growing rapidly
- This will drive interest for tools such as NCS to cut emissions and create offsets
- NCSs offer several advantages:
  - Co-benefits to carbon reductions support UN Sustainable Development Goals that are more visible to communities and meet multiple ESG goals
  - Low-cost option with offsets ranging from \$10 to \$40 per ton of $CO_2$
  - Provide an opportunity to capture carbon from the whole value chain enabling Scope 1, 2, and 3 emissions
- Scaling NCS will be challenging and will have to address implementation and other issues

Source: Trove Research, Credit Suisse, ADI Analytics

# Nature can provide a significant component of the greenhouse reductions outlined in the Paris Agreement

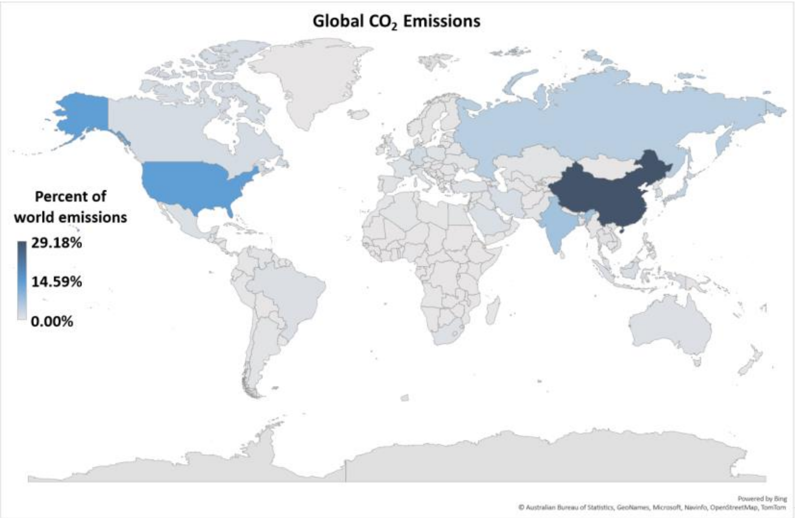


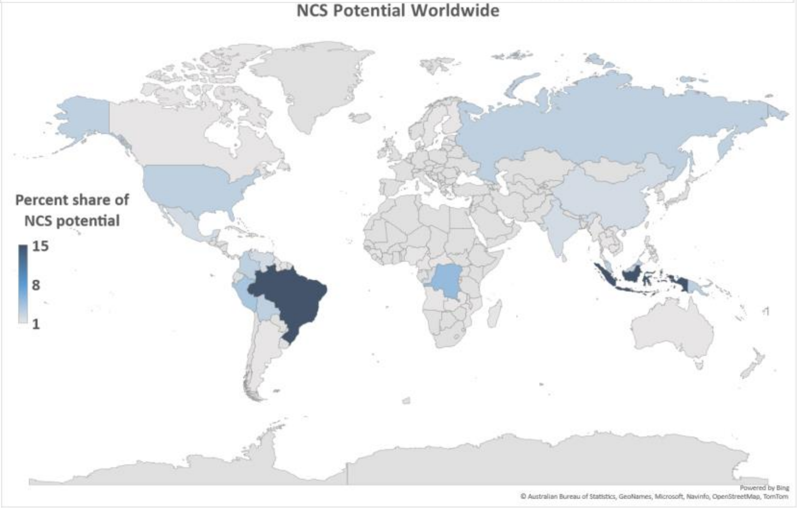
# Natural climate solutions are much more than decarbonization and provide a number of other benefits



# Disparities in where $CO_2$ is emitted and where NCS can be deployed have several scaling challenges and implications

## Global $CO_2$ emissions vs. NCS potential




## Discussion

- NCS deployment will be a complex, global initiative requiring international cooperation in policies and implementation and support of local communities
- Regions with high NCS potential are different than where $CO_2$ is emitted. Emissions are in the global north while NCS potential is in the global south
- This disparity has several implications:
  - The communities impacted by NCS initiatives are not the communities responsible for emissions.
  - Landowners and communities will need incentives to implement the projects and maintain them long term.
  - Regulations will vary from country to country.
  - Smaller enterprises will likely have more difficulty implementing their own NCSs.

# The ADI NCS study will be an in-depth review of market size, commercial models, innovation, policies, projects, and players

**ADI multi-client report on NCS**

1. Market size and forecasts
2. Commercial models
3. Innovation and new technologies
4. Policies, regulations, and protocols
5. Risks and challenges
6. NCS projects, suppliers, costs

# ADI's proposed study contents is detailed and comprehensive but can be shaped and refined further by subscribers

| | | | |
|---|---|---|---|
| 1 | **Executive summary**<br>*Key conclusions, findings, and strategic implications with a review workshop and data spreadsheet* | 7 | **Suppliers of common NCS projects**<br>*Review of common NCS projects (REDD+, ARR, ALM, IFM, WRC, etc.), suppliers for project design, and locations for various projects* |
| 2 | **Introduction to NCS**<br>*Background and introductory information on NCS industry history, terms, and implications* | 8 | **Challenges for NCS**<br>*Analysis of technical and structural challenges (e.g., leakage, permanence, implementation, robustness of standards) and potential solutions to these challenges* |
| 3 | **NCS market drivers**<br>*Review of key activities and initiatives driving demand for NCS (e.g., NCSA; IETA Markets for NCS) and carbon credits* | 9 | **Innovations in NCS**<br>*List of emerging NCS topics and improvements to accounting and mitigation approaches* |
| 4 | **Policy and regulatory initiatives**<br>*Identification current policy initiatives (e.g., UNCCC) , policies under consideration, and those needed to improve NCS industry* | 10 | **Risks and mitigants**<br>*Review of risks for NCS implementation and mitigants available* |
| 5 | **NCS carbon credit supply and demand**<br>*Forecasts of supply and demand for voluntary carbon market and NCS credits through 2030* | 11 | **Market and strategic implications**<br>*Analysis of implications for various technical, structural, and regulatory changes to NCS credit market* |
| 6 | **NCS carbon credit pricing**<br>*Forecasts of pricing and market size through 2030* | 12 | **Conclusions and recommendations**<br>*Key findings and major conclusions* |

# ADI's "Natural Climate Solutions in the Voluntary Carbon Market" offers subscribers a number of benefits

| Outcomes | Deliverables |
|---|---|
| 1 In-depth coverage of NCS markets | ~100-page report by mid-December 2022 |
| 2 Extensive review of existing and emerging policy and regulatory environment | ~20-page executive summary deck |
| 3 Review of NCS projects, suppliers, players, stakeholders, and procurement | Spreadsheet data package |
| 4 NCS costs and breakdown by project type and cost improvement opportunities | Review workshop and analyst access |
| 5 Key commercial insights and strategic implications | Quarterly subscription option to stay updated |

Contact Uday Turaga, +1.281.506.8234 or
info@adi-analytics.com to purchase this study.

# Outline

- Study Prospectus
- **About ADI**

# ADI is a consulting firm serving oil & gas, energy, chemicals, and industrial clients with expertise, rigor, and passion

**Operators** | **Investors** | **Industrials** | **Traders** | **Government**

| | | | | |
|---|---|---|---|---|
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| Feedstocks | Petrochemicals | Basic Chemicals | Polymers & Plastics | Specialty Chemicals |
| Power generation | Renewables | Transmission | Energy Transition | Transportation |

**Markets** | **Operations** | **Technology** | **Commercial** | **Policy**

# Over 250 clients – Fortune 500 brands, mid-sized firms, start-ups, and investors – have engaged ADI to shape decisions

## Oil & Gas

ExxonMobil, Chevron, bp, ConocoPhillips, Phillips 66, Santos, SK, ptt Group, Marubeni, Reliance

## Chemicals

BASF We create chemistry, Dow, DuPont, lyondellbasell, NOVA Chemicals, Borealis, sabic, Solvay, Cabot, Air Liquide, Lubrizol, Veolia

## Industrials

Schlumberger, Baker Hughes, Siemens, Honeywell, Expro, Gardner Denver, Emerson, Schneider Electric, IHI, B&W, AECOM

## Investors

KKR, Elliott, Edgewater Capital Partners, FFP, Spire Capital, Arsenal Capital Partners, Advent International Global Private Equity, Hastings Equity Partners, EV Private Equity, Riverside, Lindsay Goldberg, Altira, Ben Franklin Technology Partners

## Start-ups

CelluForce, Stabilis Energy, 908devices, Zahroof Valves Inc, FlexGen, ProSep, agilyx

# Our value proposition – expertise, experience, analytics, and thought leadership – is designed to help clients succeed

Deep, frontline **industry expertise**

Over **600 projects** for **250+ clients** since 2009

Differentiated **thought leadership**

**Proprietary analytics-** and **data-driven**

# Clients accelerate priorities with ADI's consulting services, subscription research, data analytics, and conferences

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Discover and capture opportunities, solve problems, and help businesses thrive amid uncertainty with ADI's market research and management consulting services

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Track markets with ADI's subscription research

## Analytics

Inform workflows with ADI data, models, and analytics


## Forums

Build a strategic view and network at our conferences

# Clients shape strategy, grow sales, refine costs, drive deals, and build competencies with ADI's consulting services


Market research and strategy

Corporate strategy and portfolio analysis

Sales, marketing, and pricing strategy

M&A strategy, transaction advisory, and due diligence

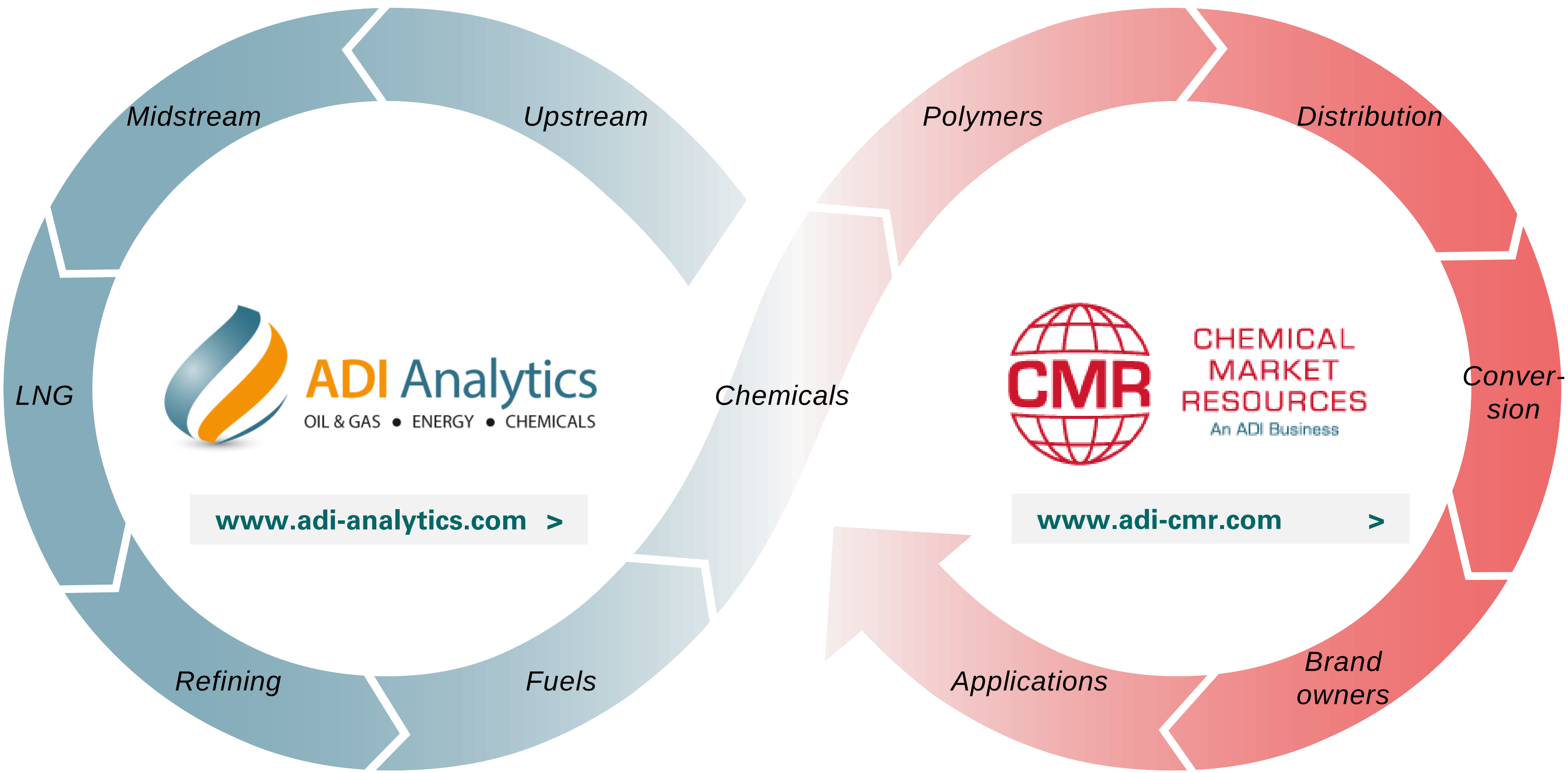
Cost benchmarking and economic analyses

Offering and product management

Technology, R&D, and innovation strategy

ESG, sustainability, and supply chain strategies

# After acquiring Chemical Market Resources, ADI's expertise has grown and now spans the entire hydrocarbon value chain



# ADI enjoys a stellar reputation for exceptional project delivery and client service and satisfaction

"Work directly with firm partners … high-quality work products."

– Alex Rozenfeld, *VP, Ventures, Shell*

"Lots of oil & gas expertise. Very analytically driven. Better customer service."

– Vikki Dunn, *CMO, GE Oil & Gas*

"The best about ADI is their ability to drill into a specialized area."

– Johanna Schmidtke, *Director, Saudi Aramco*

"Very diligent, very detailed … went the extra mile."

– Elliott Smith, *VP, Strategy, Voith*

"They've been outstanding. ADI is very thorough, very professional. They deliver a lot of good insights right out of the gate."

– Randy Benson, *VP, Sales, Harsco*

"The thoroughness of ADI's research is phenomenal."

– Steve Woodward, *SVP, Antero Resources*

"ADI did a great job to help us think and advance in making our investments."

– Meghan Leggett, *Principal, White Deer*

"ADI has very deep market knowledge and access to the right experts and delivered very successful projects."

- Brian Orkin, *Partner, Arsenal Capital Partners*

# Build a strategic view of energy and chemical value chains informed with executive perspectives at ADI's conferences


**ADI Forum**, our flagship conference held annually since 2017 in Houston, focuses on the oil & gas value chain

**FlexPO+**, hosted by ADI Chemical Market Resources since 1996, covers polymers, plastics, chemicals, and petrochemicals

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